# 19ECE311 – COMPUTER NETWORKS

## ASSIGNMENT - 2

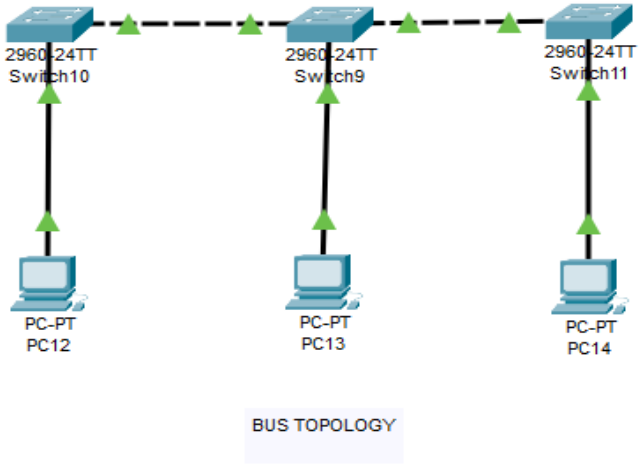
Name: Kunal Kumar Pant Roll no: AM.EN.U4ECE22022

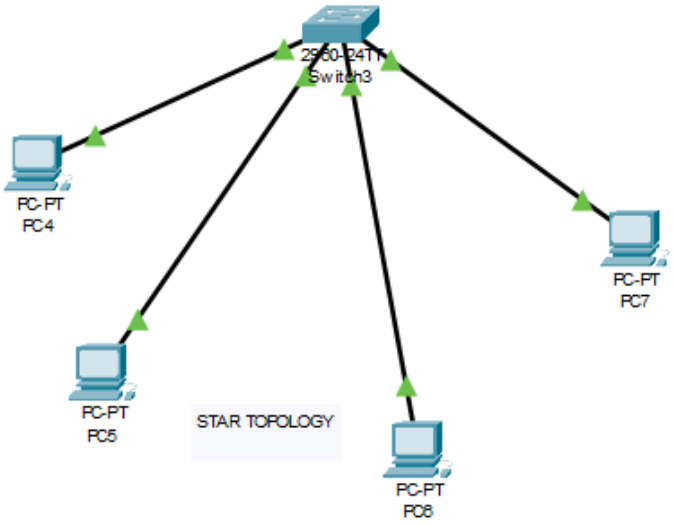
**Ques 1:** Create all the topologies discussed in class in Cisco Packet Tracer (CPT)

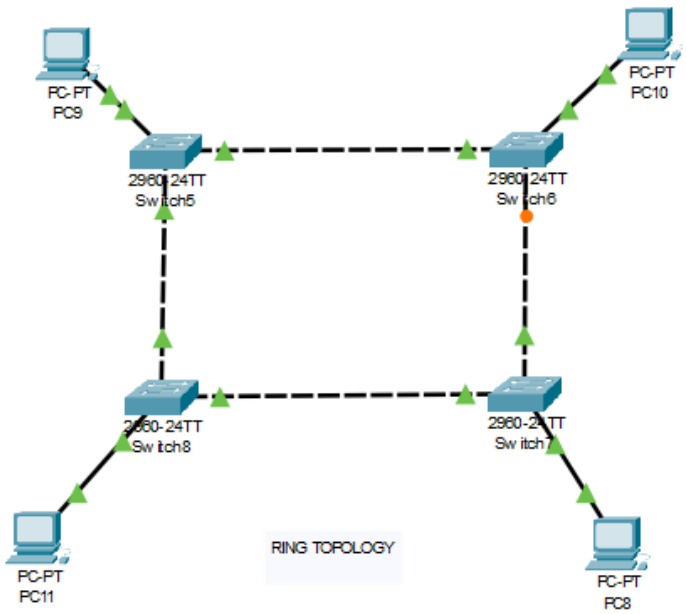
**Ans 1:**

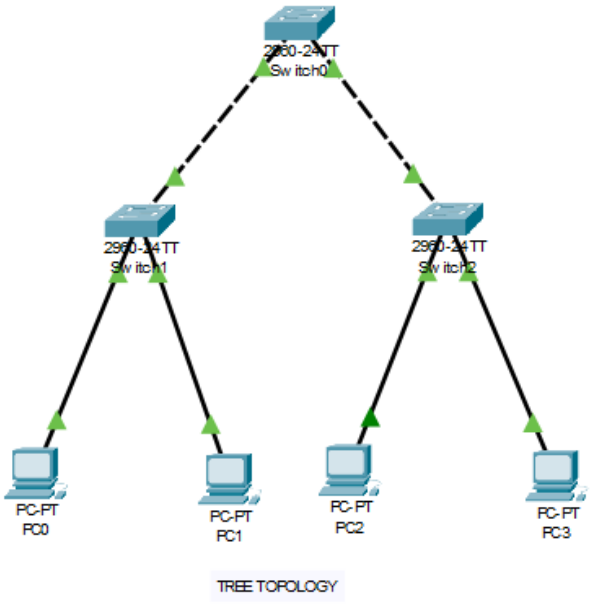
**Materials Required:**

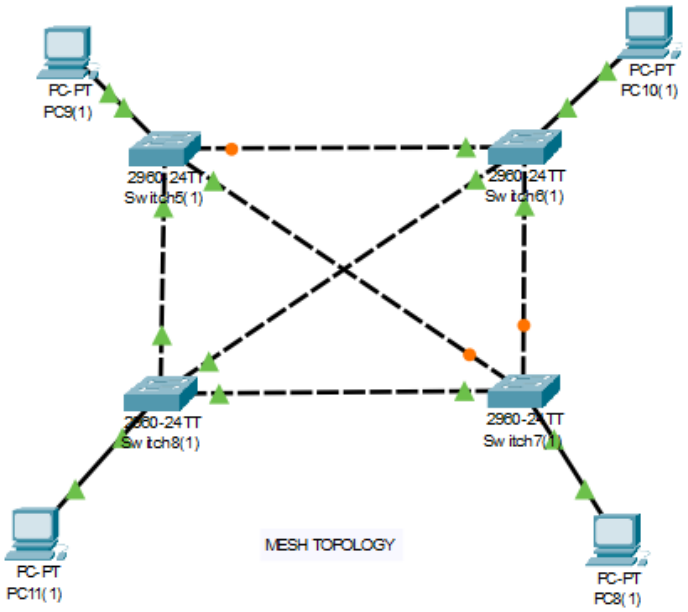
- Windows/ Mac subsystem
- Cisco Packet Tracer (Software)
- PC (End Device)
- Switch 2960 (Network Device)
- Copper Straight Through wires
- Copper Cross-Over wires

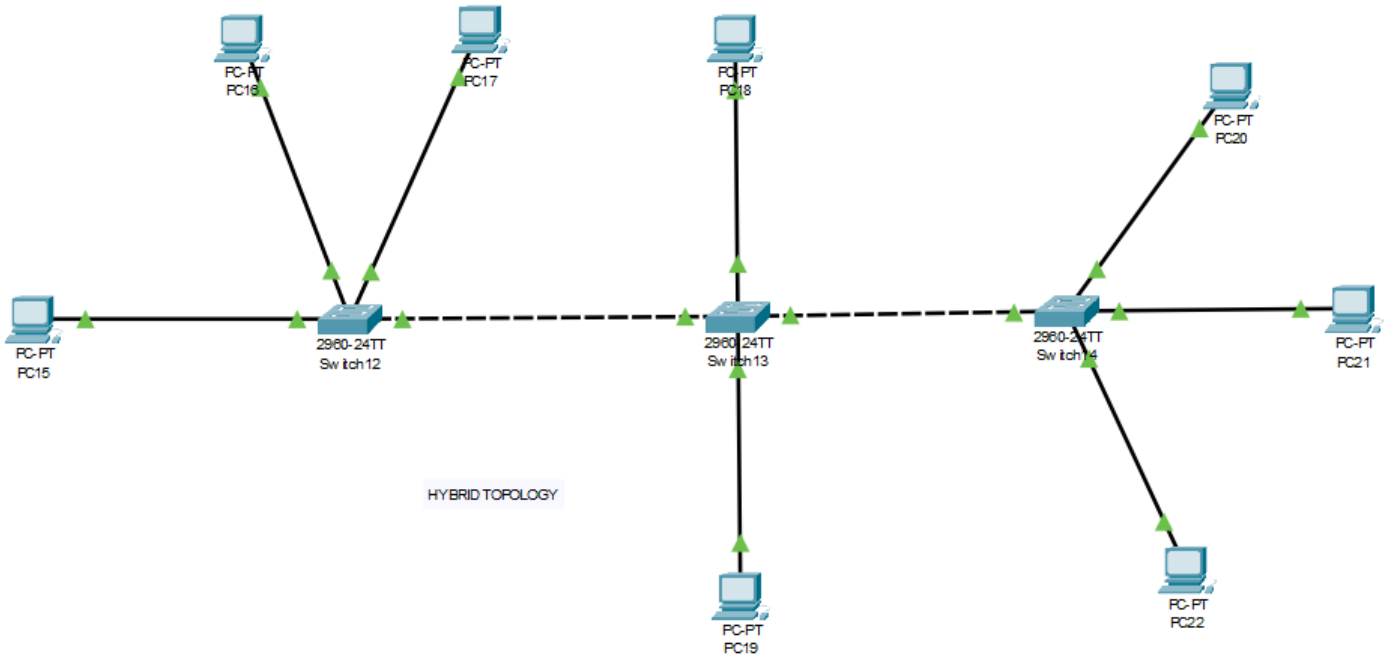





---

**Ques 2:** Create 3 LAN networks connected via a single Router (CPT). Choose appropriate router, connection and configure it. Each LAN network is configured via Tree, Star and Ring topologies respectively.

The IP addresses for the implementation of topologies should be chosen based on the 5 digits of your Roll No.

Ex: U4ECE220XX for A batch

U4ECE221XX for B batch

Ex IP address for Roll no 12 (for A and B batch) is:220.12.x.x for A batch and 221.12.x.x for B batch. You may take the subsequent IP addresses based on the mentioned roll number IP.

**Ans 2:**

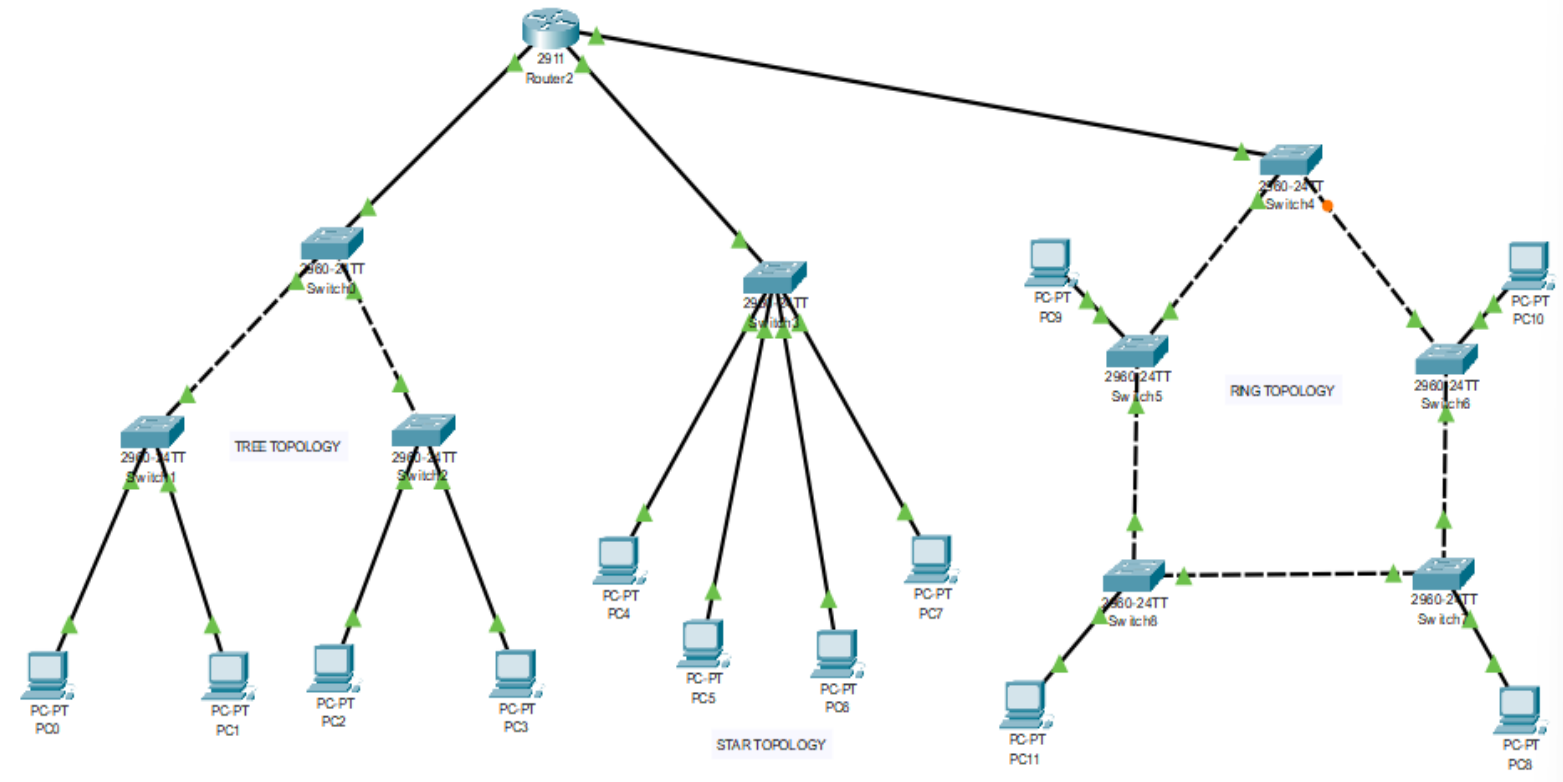
**Materials Required:**

- Windows/ Mac subsystem
- Cisco Packet Tracer (Software)
- PC (End Device)
- Router (Network Device)
- Switch 2960 (Network Device)
- Copper Straight Through wires
- Copper Cross-Over wires

*Note: We choose a 2911 router as it allows for 3 FastEthernet connections which we require for connecting 3 LAN networks/ topology networks together.*

The IP address for the implementation of topologies will be: **220.22.x.x**

Also, we choose a class C subnet Mask i.e. **255.255.255.0**



Terminal commands for the router are as follows:

*enable*

*configure terminal*

*------ --- Tree LAN ------------*

*interface GigabitEthernet0/0*

*ip address 220.22.1.1 255.255.255.0*

*no shutdown*

*exit*

*------- Star LAN -----------*

*interface GigabitEthernet0/1*

*ip address 220.22.2.1 255.255.255.0*

*no shutdown*

*exit*

*------- Ring LAN --------------*

*interface GigabitEthernet0/2*

*ip address 220.22.3.1 255.255.255.0*

*no shutdown*

*exit*

*--- Save the configuration ---*

*end*

*write memory*

To check if the interfaces are up:

*show ip interface brief*

```
Press RETURN to get started!

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2, changed state to up
```

**Fig:** Terminal Status after complete setup

**Observations:**

Using straight-through and cross-over cables appropriately was necessary for establishing connections. Each topology demonstrated unique characteristics, such as redundancy in Ring topology and scalability in Tree topology. The router's configuration commands were straightforward but required careful interface mapping to avoid IP conflicts.

**Inference:**

The use of a 2911 Router with 3 FastEthernet ports was critical to connect the three different LAN topologies simultaneously. Proper IP addressing and subnetting ensured smooth inter-network communication. The setup followed standard networking practices and showed effective use of Cisco Packet Tracer tools.

**Results:**

- Successfully created different topologies (Bus, Ring, Star, Tree, Mesh and Hybrid) in Cisco Packet Tracer.
- Built 3 LAN networks (Tree, Star, and Ring) and connected them using a Cisco 2911 Router.
- Assigned IP addresses based on Roll Number: 220.22.x.x with a Class C subnet mask (255.255.255.0).
- Configured router interfaces (GigabitEthernet0/0, 0/1, and 0/2) for each LAN correctly.
- Verified successful configuration through the show ip interface brief command, showing active interfaces.